

**WHAT IS CLAIMED IS:**

1. An isolated and purified DNA molecule which encodes a bradykinin B<sub>1</sub> receptor or a functional derivative thereof.

5 2. The isolated and purified DNA molecule of claim 1, having a nucleotide sequence:

CAGAGAAAACCTCCTCCAAAAGCAGCTCTCACTATCAGAAAACCCAACTAC  
AGTTGTGAACGCCTTCATTTTCTGCCTGAGGTCTCAGTCCGTCGGCCCAG  
ACTGAAGTGCAGTGGCACAATCATAGCTCGCTGCAGCCTCGACCTTCCAG  
10 GCTTAAACGATTCTCCCACCTCAGCCTCTCGAGTTGCTGGGACCACAGGT  
CACTGTGCATGGCATCATCCTGGCCCCCTCTAGAGCTCCAATCCTCCAAC  
CAGAGCCAGCTCTTCCCTCAAATGCTACGGCCTGTGACAATGCTCCAGA  
AGCCTGGGACCTGCTGCACAGAGTGCTGCCGACATTTATCATCTCCATCT  
GTTTCTTCGGCCTCCTAGGGAACCTTTTTTGTCTGTTGGTCTTCCTCCTG  
15 CCCCCGGCGGCAACTGAACGTGGCAGAAATCTACCTGGCCAACCTGGCAGC  
CTCTGATCTGGTGTGTTGTCTTGGGCTTGCCCTTCTGGGCAGAGAATATCT  
GGAACCAGTTTAACTGGCCTTTCGGAGCCCTCCTCTGCCGTGTCATCAAC  
GGGGTCATCAAGGCCAATTTGTTTCATCAGCATCTTCCTGGTGGTGGCCAT  
CAGCCAGGACCGCTACCGCGTGCTGGTGCACCCTATGGCCAGCGGAAGGC  
AGCAGCGGCGGAGGCAGGCCCGGGTCACCTGCGTGCTCATCTGGGTGTG  
20 GGGGGCCTCTTGAGCATCCCCACATTCCTGCTGCGATCCATCCAAGCCGT  
CCCAGATCTGAACATCACCGCCTGCATCCTGCTCCTCCCCCATGAGGCCT  
GGCACTTTGCAAGGATTGTGGAGTTAAATATTCTGGGTTTCCTCCTACCA  
CTGGCTGCGATCGTCTTCTTCAACTACCACATCCTGGCCTCCCTGCGAAC  
GCGGGAGGAGGTCAGCAGGACAAGGTGCGGGGGCCGCAAGGATAGCAAGA  
25 CCACAGCGCTGATCCTCACGCTCGTGGTTGCCTTCCTGGTCTGCTGGGCC  
CCTTACCACTTCTTTGCCTTCCTGGAATTCTTATTCCAGGTGCAAGCAGT  
CCGAGGCTGCTTTTGGGAGGACTTCATTGACCTGGGCCTGCAATTGGCCA  
ACTTCTTTGCCTTCACTAACAGCTCCCTGAATCCAGTAATTTATGTCTTT  
GTGGGCCGGCTCTTCAGGACCAAGGTCTGGGAACCTTTATAACAATGCAC  
30 CCCTAAAAGTCTTGCTCCAATATCTTCATCCCATAGGAAAGAAATCTTCC  
AACTTTTCTGGCGGAATTAAAACAGCATTGAACCAAGAAAAAAAAAAAAA  
AAAAAA (SEQ.ID.NO.:1) or functional derivatives thereof.

3. The isolated and purified DNA molecule of claim 1, wherein said DNA molecule is genomic DNA.

4. An expression vector for expression of a bradykinin B<sub>1</sub> receptor in a recombinant host, wherein said vector contains a recombinant gene encoding a bradykinin B<sub>1</sub> receptor or functional derivaative thereof.

5. The expression vector of claim 4, wherein the expression vector contains a cloned gene encoding the bradykinin B<sub>1</sub> receptor, having a nucleotide sequence:

CAGAGAAAACCTCCTCCAAAAGCAGCTCTCACTATCAGAAAACCCAACTAC  
AGTTGTGAACGCCTTCATTTTCTGCCTGAGGTCTCAGTCCGTCGGCCCAG  
ACTGAAGTGCAGTGGCACAATCATAGCTCGCTGCAGCCTCGACCTTCCAG  
GCTTAAACGATTCTCCACCTCAGCCTCTCGAGTTGCTGGGACCACAGGT  
CACTGTGCATGGCATCATCCTGGCCCCCTCTAGAGCTCCAATCCTCCAAC  
CAGAGCCAGCTCTTCCCTCAAATGCTACGGCCTGTGACAATGCTCCAGA  
AGCCTGGGACCTGCTGCACAGAGTGCTGCCGACATTTATCATCTCCATCT  
GTTTCTTCGGCCTCCTAGGGAACCTTTTTGTCTGTTGGTCTTCCTCCTG  
CCCCGGCGGCAACTGAACGTGGCAGAAATCTACCTGGCCAACCTGGCAGC  
CTCTGATCTGGTGTGTTGTCTTGGGCTTGCCCTTCTGGGCAGAGAATATCT  
GGAACCAGTTTAACTGGCCTTTCGGAGCCCTCCTCTGCCGTGTCATCAAC  
GGGGTCATCAAGGCCAATTTGTTTCATCAGCATCTTCCTGGTGGTGGCCAT  
CAGCCAGGACCGCTACCGCGTGCTGGTGCACCCTATGGCCAGCGGAAGGC  
AGCAGCGGCGGAGGCAGGCCCCGGGTACCTGCGTGCTCATCTGGGTGTG  
GGGGGCCTCTTGAGCATCCCCACATTCTGCTGCGATCCATCCAAGCCGT  
CCCAGATCTGAACATCACCGCCTGCATCCTGCTCCTCCCCCATGAGGCCT  
GGCACTTTGCAAGGATTGTGGAGTTAAATATTCTGGGTTTCCTCCTACCA  
CTGGCTGCGATCGTCTTCTTCAACTACCACATCCTGGCCTCCCTGCGAAC  
GCGGGAGGAGGTGAGCAGGACAAGGTGCGGGGGCCGCAAGGATAGCAAGA  
CCACAGCGCTGATCCTCACGCTCGTGGTTGCCTTCCTGGTCTGCTGGGCC  
CCTTACCACTTCTTTGCCTTCTGGAATTCTTATTCCAGGTGCAAGCAGT  
CCGAGGCTGCTTTTGGGAGGACTTCATTGACCTGGGCCTGCAATTGGCCA  
ACTTCTTTGCCTTCACTAACAGCTCCCTGAATCCAGTAATTTATGTCTTT  
GTGGGCGCGCTCTTCAGGACCAAGGTCTGGGAACCTTTATAACAATGCAC  
CCCTAAAAGTCTTGCTCCAATATCTTCATCCCATAGGAAAGAAATCTTCC

AACTTTTCTGGCGGAATTAAAACAGCATTGAACCAAGAAAAAAAAAAAAA  
AAAAAA (SEQ.ID.NO.:1) or functional derivative thereof.

5 6. The expression vector of claim 4, wherein the  
expression vector contains genomic DNA encoding the bradykinin B1  
receptor.

10 7. A recombinant host cell containing a  
recombinantly cloned gene encoding a bradykinin B1 receptor or  
functional derivative thereof.

8. The recombinant host cell of claim 7, wherein said  
gene encoding the bradykinin B1 receptor has a nucleotide sequence:  
15 CAGAGAAAACCTCCTCCAAAAGCAGCTCTCACTATCAGAAAACCCAACTAC  
AGTTGTGAACGCCTTCATTTTCTGCCTGAGGTCTCAGTCCGTCCGCCCCAG  
ACTGAAGTGCAGTGGCACAATCATAGCTCGCTGCAGCCTCGACCTTCCAG  
GCTTAAACGATTCTCCACCTCAGCCTCTCGAGTTGCTGGGACCACAGGT  
CACTGTGCATGGCATCATCCTGGCCCCCTCTAGAGCTCCAATCCTCCAAC  
CAGAGCCAGCTCTTCCCTCAAATGCTACGGCCTGTGACAATGCTCCAGA  
AGCCTGGGACCTGCTGCACAGAGTGCTGCCGACATTTATCATCTCCATCT  
20 GTTTCTTCGGCCTCCTAGGGAACCTTTTTGTCTGTTGGTCTTCCTCCTG  
CCCCGGCGGCAACTGAACGTGGCAGAAATCTACCTGGCCAACCTGGCAGC  
CTCTGATCTGGTGTGTTGTCTTGGGCTTGCCCTTCTGGGCAGAGAATATCT  
GGAACCAGTTTAACTGGCCTTTCGGAGCCCTCCTCTGCCGTGTCATCAAC  
GGGGTCATCAAGGCCAATTTGTTCATCAGCATCTTCCTGGTGGTGGCCAT  
25 CAGCCAGGACCGCTACCGCGTGCTGGTGCACCCTATGGCCAGCGGAAGGC  
AGCAGCGGCGGAGGCAGGCCCCGGGTCACCTGCGTGCTCATCTGGGTGTG  
GGGGGCCTCTTGAGCATCCCCACATTCCTGCTGCGATCCATCCAAGCCGT  
CCCAGATCTGAACATCACCGCCTGCATCCTGCTCCTCCCCCATGAGGCCT  
GGCACTTTGCAAGGATTGTGGAGTTAAATATTCTGGGTTTCCTCCTACCA  
CTGGCTGCGATCGTCTTCTTCAACTACCACATCCTGGCCTCCCTGCGAAC  
30 GCGGGAGGAGGTCAGCAGGACAAGGTGCGGGGGCCGCAAGGATAGCAAGA  
CCACAGCGCTGATCCTCACGCTCGTGGTTGCCTTCCTGGTCTGCTGGGCC  
CCTTACCACTTCTTTGCCTTCCTGGAATTCTTATTCCAGGTGCAAGCAGT  
CCGAGGCTGCTTTTGGGAGGACTTCATTGACCTGGGCCTGCAATTGGCCA  
ACTTCTTTGCCTTCACTAACAGCTCCCTGAATCCAGTAATTTATGTCTTT

GTGGGCCCGGCTCTTCAGGACCAAGGTCTGGGAACCTTTATAACAATGCAC  
CCCTAAAAGTCTTGCTCCAATATCTTCATCCCATAGGAAAGAAATCTTCC  
AACTTTTCTGGCGGAATTAAAACAGCATTGAACCAAGAAAAAAAAAAAAA  
AAAAAA (SEQ.ID.NO.:1) or functional derivative thereof.

5                   9.     The recombinant host cell of claim 7, wherein said  
cloned gene encoding the bradykinin B<sub>1</sub> receptor is genomic DNA.

10                   10.    A protein, in substantially pure form which  
functions as a bradykinin B<sub>1</sub> receptor.

11.    The protein according to claim 10, having an amino  
acid sequence:

Met Ala Ser Ser Trp Pro Pro Leu Glu Leu Gln Ser Ser Asn  
Gln Ser Gln Leu Phe Pro Gln Asn Ala Thr Ala Cys Asp Asn  
15   Ala Pro Glu Ala Trp Asp Leu Leu His Arg Val Leu Pro Thr  
Phe Ile Ile Ser Ile Cys Phe Phe Gly Leu Leu Gly Asn Leu  
Phe Val Leu Leu Val Phe Leu Leu Pro Arg Arg Gln Leu Asn  
Val Ala Glu Ile Tyr Leu Ala Asn Leu Ala Ala Ser Asp Leu  
Val Phe Val Leu Gly Leu Pro Phe Trp Ala Glu Asn Ile Trp  
20   Asn Gln Phe Asn Trp Pro Phe Gly Ala Leu Leu Cys Arg Val  
Ile Asn Gly Val Ile Lys Ala Asn Leu Phe Ile Ser Ile Phe  
Leu Val Val Ala Ile Ser Gln Asp Arg Tyr Arg Val Leu Val  
His Pro MET Ala Ser Gly Arg Gln Gln Arg Arg Arg Gln Ala  
Arg Val Thr Cys Val Leu Ile Trp Val Val Gly Gly Leu Leu  
25   Ser Ile Pro Thr Phe Leu Leu Arg Ser Ile Gln Ala Val Pro  
Asp Leu Asn Ile Thr Ala Cys Ile Leu Leu Leu Pro His Glu  
Ala Trp His Phe Ala Arg Ile Val Glu Leu Asn Ile Leu Gly  
Phe Leu Leu Pro Leu Ala Ala Ile Val Phe Phe Asn Tyr His  
Ile Leu Ala Ser Leu Arg Thr Arg Glu Glu Val Ser Arg Thr  
30   Arg Cys Gly Gly Arg Lys Asp Ser Lys Thr Thr Ala Leu Ile  
Leu Thr Leu Val Val Ala Phe Leu Val Cys Trp Ala Pro Tyr  
His Phe Phe Ala Phe Leu Glu Phe Leu Phe Gln Val Gln Ala  
Val Arg Gly Cys Phe Trp Glu Asp Phe Ile Asp Leu Gly Leu  
Gln Leu Ala Asn Phe Phe Ala Phe Thr Asn Ser Ser Leu Asn

Pro Val Ile Tyr Val Phe Val Gly Arg Leu Phe Arg Thr Lys  
Val Trp Glu Leu Tyr Lys Gln Cys Thr Pro Lys Ser Leu Ala  
Pro Ile Ser Ser Ser His Arg Lys Glu Ile Phe Gln Leu Phe  
Trp Arg Asn (SEQ.ID.NO.:2) or functional derivative thereof

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12. A monospecific antibody immunologically reactive  
with a bradykinin B<sub>1</sub> receptor.

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13. The antibody of Claim 12, wherein the antibody  
blocks activity of the bradykinin B<sub>1</sub> receptor.

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14. A process for expression of a bradykinin B<sub>1</sub>  
receptor protein in a recombinant host cell, comprising:  
(a) transferring the expression vector of Claim 4  
into suitable host cells; and  
(b) culturing the host cells of step (a) under  
conditions which allow expression of the  
bradykinin B<sub>1</sub> receptor protein from the  
expression vector.

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15. A method of identifying compounds that modulate  
bradykinin B<sub>1</sub> receptor activity, comprising:

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- (a) combining a suspected modulator of  
bradykinin B<sub>1</sub> receptor activity with a  
bradykinin B<sub>1</sub> receptor; and
- (b) measuring an effect of the modulator on the  
receptor.

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16. The method of claim 15, wherein the effect of the  
modulator on the receptor is inhibiting or enhancing binding of B<sub>1</sub>  
receptor ligands.

17. The method of claim 15, wherein the effect of the modulator on the receptor is stimulation or inhibition of signal transduction mediated by B<sub>1</sub> receptors.

5 18. The method of claim 17, wherein the effect of the modulator on the receptor is signal transduction mediated by B<sub>1</sub> receptors, and said signal transduction is selected from the group consisting of phosphatidyl inositol hydrolysis, release of intracellular Ca<sup>2+</sup> stores, and arachidonic acid release.

10 19. A compound active in the method of Claim 15, wherein said compound is a modulator of a bradykinin B<sub>1</sub> receptor.

15 20. A compound active in the method of Claim 15, wherein said compound is an agonist or antagonist of a bradykinin B<sub>1</sub> receptor.

20 21. A compound active in the method of Claim 15, wherein said compound is a modulator of expression of a bradykinin B<sub>1</sub> receptor.

22. A pharmaceutical composition comprising a compound active in the method of Claim 15, wherein said compound is a modulator of bradykinin B<sub>1</sub> receptor activity.

25 23. A method of treating a patient in need of such treatment for a condition which is mediated by a bradykinin B<sub>1</sub> receptor, comprising administration of a bradykinin B<sub>1</sub> receptor modulating compound active in the method of Claim 15.

30 24. A method of treating a patient in need of such treatment for a condition which is mediated by a bradykinin B<sub>1</sub> receptor and is characterized by hyperalgesia, acute inflammation or

chronic inflammation, comprising administration of a bradykinin B<sub>1</sub> receptor modulating compound active in the method of Claim 15.

25. A method of identifying compounds that modulate bradykinin B<sub>1</sub> receptor activity, comprising:

- (a) combining a suspected modulator of bradykinin B<sub>1</sub> receptor activity with a cell expressing a recombinant bradykinin B<sub>1</sub> receptor; and
- (b) measuring an effect of the modulator on the receptor.

26. The method of claim 25, wherein the effect of the modulator on the receptor in step (b) is inhibiting or enhancing binding of B<sub>1</sub> receptor ligands.

27. The method of claim 25, wherein the effect of the modulator on the receptor in step (b) is inhibition or enhancement of signal transduction mediated by B<sub>1</sub> receptors.

28. The method of claim 27, wherein the signal transduction is selected from a group consisting of phosphatidyl inositol hydrolysis, release of intracellular Ca<sup>2+</sup> stores, and arachidonic acid release.

29. A compound active in the method of Claim 25, wherein said compound is a modulator of a bradykinin B<sub>1</sub> receptor.

30. A compound active in the method of Claim 25, wherein said compound is an agonist or antagonist of a bradykinin B<sub>1</sub> receptor.

31. A compound active in the method of Claim 25, wherein said compound is a modulator of expression of a bradykinin B1 receptor.

5 32. A pharmaceutical composition comprising a compound active in the method of Claim 25, wherein said compound is a modulator of bradykinin B1 receptor activity.

10 33. A method of treating a patient in need of such treatment for a condition which is mediated by a bradykinin B1 receptor, comprising administration of a bradykinin B1 receptor modulating compound active in the method of Claim 25.

15 34. A method of treating a patient in need of such treatment for a condition which is mediated by a bradykinin B1 receptor and is characterized by hyperalgesia, acute inflammation or chronic inflammation, comprising administration of a bradykinin B1 receptor modulating compound active in the method of Claim 25.

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